

VREUGDEWATER ET AL. — 10/797,568

Attorney Docket No.: 081468-0308406 - Supplemental Amendment Under §1.116 -

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (*Currently Amended*) A lithographic apparatus, comprising:  
a radiation system configured to provide a beam of radiation;  
a support structure configured to support a patterning device is, said patterning configured to impart a pattern to said beam of radiation;  
a substrate holder configured to hold a substrate;  
a projection system that projects said patterned beam onto a target portion of said substrate; and

an actuator configured to position at least one part within said radiation system, said support structure, said substrate holder, or said projection system, said actuator comprising a coil arrangement that includes a plurality of coils separated from each other by one or more separation layers of high thermal conductivity material arranged to be in substantial thermal contact with at least one cooling element that circulates coolant fluid and is independent of distinct from said one or more separation layers.

2. (*Original*) A lithographic apparatus according to Claim 1, wherein said separation layers are parallel to the plane of said coil arrangement and wherein said cooling element is located radially outward from said coil arrangement.

3. (*Original*) A lithographic apparatus according to Claim 1, wherein said separation layers are perpendicular to the plane of said coil arrangement and wherein said cooling element is located axially above and/or axially below said coil arrangement.

4. (*Previously Presented*) A lithographic apparatus according to Claim 1, wherein said separation layers comprise first layers that are parallel to the plane of said

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coil arrangement and second layers that are perpendicular to the plane of said coil arrangement and wherein said cooling element elements located axially above or below said coil arrangement.

5. *(Original)* A lithographic apparatus according to Claim 1, wherein at least one of said cooling element and separation layers are formed of steel.

6. *(Original)* A lithographic apparatus according to Claim 1, wherein at least one of said cooling element and said separation layers are formed of ceramic.

7. *(Currently Amended)* A lithographic apparatus according to Claim 1, wherein said cooling element is a plate containing cooling channels such that a the coolant fluid can be circulated through said cooling channels.

8. *(Original)* A lithographic apparatus according to claim 7, wherein said cooling channels have a substantially circular or a substantially rectangular cross-section.

9. *(Currently Amended)* A lithographic apparatus according to Claim 1, wherein said separation layers contain cooling channels such that a the coolant fluid can be circulated through said cooling channels.

10. *(Currently Amended)* A device manufacturing method comprising:  
providing a substrate held by a substrate holder;  
providing a beam of radiation using an illumination system;  
imparting a desired pattern onto said beam of radiation by a patterning device supported by a support structure;  
projecting said patterned beam of radiation onto a target portion of said substrate via a projection system; and  
positioning at least one part within said radiation system, said support structure, said substrate holder, or said projection system by an actuator, said actuator comprising

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a coil arrangement that includes a plurality of coils separated from each other by one or more separation layers of high thermal conductivity material arranged to be in substantial thermal contact with at least one cooling element that circulates coolant fluid and is independent of distinct from said one or more separation layers s.

11. (*Currently Amended*) A lithographic actuating mechanism, comprising:

a magnet assembly;

at least one cooling element; and

a coil arrangement including a plurality of coils separated from each other by one or more separation layers of high thermal conductivity material arranged to be in substantial thermal contact with said at least one cooling element that circulates coolant fluid and is independent of distinct from said one or more separation layers.

12. (*Original*) A lithographic actuating mechanism according to Claim 11, wherein said separation layers are parallel to the plane of said coil arrangement and wherein said cooling element is located radially outward from said coil arrangement.

13. (*Original*) A lithographic actuating mechanism according to Claim 11, wherein said separation layers are perpendicular to the plane of said coil arrangement and wherein said cooling element is located axially above and/or axially below said coil arrangement.

14. (*Previously Presented*) A lithographic actuating mechanism according to Claim 11, wherein said separation layers comprise first layers that are parallel to the plane of said coil arrangement and second layers that are perpendicular to the plane of said coil arrangement and wherein said cooling element comprises elements located axially above or below said coil arrangement.

15. (*Original*) A lithographic actuating mechanism according to Claim 11, wherein at least one of said cooling element and separation layers are formed of steel.

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16. *(Original)* A lithographic actuating mechanism according to Claim 11, wherein at least one of said cooling element and said separation layers are formed of ceramic.

17. *(Currently Amended)* A lithographic actuating mechanism according to Claim 11, wherein said cooling element is a plate containing cooling channels such that a the coolant fluid can be circulated through said cooling channels.

18. *(Original)* A lithographic actuating mechanism according to Claim 17, wherein said cooling channels have a substantially circular or a substantially rectangular cross-section.

19. *(Currently Amended)* A lithographic actuating mechanism according to Claim 11, wherein said separation layers contain cooling channels such that a the coolant fluid can be circulated through said cooling channels.